

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

KEURIG, INCORPORATED,

Plaintiff,

v.

KRAFT FOODS GLOBAL, INC.,
TASSIMO CORPORATION, and
KRAFT FOODS INC.,

Defendants

C.A. No. 07-17 (GMS)

JURY TRIAL DEMANDED

PUBLIC VERSION

NOTICE OF SUBPOENA DUCES TECUM AND AD TESTIFICANDUM

OF COUNSEL

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Kraft Foods Global, Inc., Tassimo Corporation,
and Kraft Foods Inc.*

Dated: February 8, 2008
Public Version Dated: February 14, 2008

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

KEURIG, INCORPORATED,)	
)	
Plaintiff,)	C.A. No. 07-17 (GMS)
)	
v.)	
)	JURY TRIAL DEMANDED
KRAFT FOODS GLOBAL, INC.,)	
TASSIMO CORPORATION, and)	PUBLIC VERSION
KRAFT FOODS INC.,)	
)	
Defendants)	

NOTICE OF SUBPOENA DUCES TECUM AND AD TESTIFICANDUM

PLEASE TAKE NOTICE that, pursuant to Rule 45 of the Federal Rules of Civil Procedure, a subpoena *duces tecum and ad testificandum* will be served on Insight Product Development, LLC. A true and correct copy of the subpoena is attached hereto.

POTTER ANDERSON & CORROON LLP

OF COUNSEL

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William S. Foster, Jr.
C. John Brown
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848650 / 31118

By: /s/ Richard L. Horwitz
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*Attorneys for Defendants
Kraft Foods Global, Inc., Tassimo Corporation,
and Kraft Foods Inc.*

AO88 (Rev. 12/07) Subpoena in a Civil Case

Issued by the
UNITED STATES DISTRICT COURT

_____ District of Massachusetts

KEURIG, INCORPORATED

SUBPOENA IN A CIVIL CASE

V.
KRAFT FOODS GLOBAL, INC.,
TASSIMO CORPORATION, and
KRAFT FOODS INC.,

Case Number:¹ 07-cv-00017-GMS

Pending before the United States District Court
for the District of Delaware

TO: Insight Product Development, LLC
5 Clock Tower Place, Suite 120
Maynard, MA 01754

- ☐ YOU ARE COMMANDED to appear in the United States District court at the place, date, and time specified below to testify in the above case.

PLACE OF TESTIMONY

COURTROOM

DATE AND TIME

- ☒ YOU ARE COMMANDED to appear at the place, date, and time specified below to testify at the taking of a deposition in the above case. See Attached Appendix, Schedule A for Deposition Topics
The deposition will be recorded by stenographic, audio, and/or videographic means.

PLACE OF DEPOSITION

Millennium Bostonian Hotel; 26 North Street; Boston, MA 02109 or other agreed upon location.

DATE AND TIME

3/13/2008 9:30 am

- ☒ YOU ARE COMMANDED to produce and permit inspection and copying of the following documents or objects at the place, date, and time specified below (list documents or objects):

See Attached Appendix, Schedule B for Document Requests
Documents may be delivered via overnight courier at our expense.

PLACE

Baker Botts LLP
The Warner; 1299 Pennsylvania Ave., NW; Washington, D.C. 20004-2400

DATE AND TIME

3/6/2008 5:00 pm

- ☐ YOU ARE COMMANDED to permit inspection of the following premises at the date and time specified below.

PREMISES

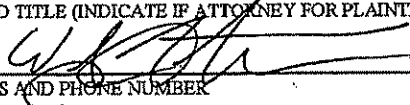
DATE AND TIME

Any organization not a party to this suit that is subpoenaed for the taking of a deposition shall designate one or more officers, directors, or managing agents, or other persons who consent to testify on its behalf, and may set forth, for each person designated, the matters on which the person will testify. Federal Rule of Civil Procedure 30(b)(6).

ISSUING OFFICER'S SIGNATURE AND TITLE (INDICATE IF ATTORNEY FOR PLAINTIFF OR DEFENDANT)

DATE

Attorney for Defendants



8 FEB 2008

ISSUING OFFICER'S NAME, ADDRESS AND PHONE NUMBER

William S. Foster, Jr.

Baker Botts, LLP; The Warner; 1299 Pennsylvania Ave., NW; Washington, D.C. 20004-2400 (202) 639-7700

(See Federal Rule of Civil Procedure 45 (c), (d), and (e), on next page)

¹ If action is pending in district other than district of issuance, state district under case number.

AO88 (Rev. 12/07) Subpoena in a Civil Case (Page 2)

PROOF OF SERVICE

DATE	PLACE
SERVED	
SERVED ON (PRINT NAME)	MANNER OF SERVICE
SERVED BY (PRINT NAME)	TITLE

DECLARATION OF SERVER

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Proof of Service is true and correct.

Executed on

DATE

SIGNATURE OF SERVER

ADDRESS OF SERVER

Federal Rule of Civil Procedure 45 (c), (d), and (e), as amended on December 1, 2007:

(c) PROTECTING A PERSON SUBJECT TO A SUBPOENA.

(1) Avoiding Undue Burden or Expense; Sanctions. A party or attorney responsible for issuing and serving a subpoena must take reasonable steps to avoid imposing undue burden or expense on a person subject to the subpoena. The issuing court must enforce this duty and impose an appropriate sanction — which may include lost earnings and reasonable attorney's fees — on a party or attorney who fails to comply.

(2) Command to Produce Materials or Permit Inspection.

(A) Appearance Not Required. A person commanded to produce documents, electronically stored information, or tangible things, or to permit the inspection of premises, need not appear in person at the place of production or inspection unless also commanded to appear for a deposition, hearing, or trial.

(B) Objections. A person commanded to produce documents or tangible things or to permit inspection may serve on the party or attorney designated in the subpoena a written objection to inspecting, copying, testing or sampling any or all of the materials or to inspecting the premises — or to producing electronically stored information in the form or forms requested. The objection must be served before the earlier of the time specified for compliance or 14 days after the subpoena is served. If an objection is made, the following rules apply:

(i) At any time, on notice to the commanded person, the serving party may move the issuing court for an order compelling production or inspection.

(ii) These acts may be required only as directed in the order, and the order must protect a person who is neither a party nor a party's officer from significant expense resulting from compliance.

(3) Quashing or Modifying a Subpoena.

(A) When Required. On timely motion, the issuing court must quash or modify a subpoena that

(i) fails to allow a reasonable time to comply;

(ii) requires a person who is neither a party nor a party's officer to travel more than 100 miles from where that person resides, is employed, or regularly transacts business in person — except that, subject to Rule 45(c)(3)(B)(ii), the person may be commanded to attend a trial by traveling from any such place within the state where the trial is held;

(iii) requires disclosure of privileged or other protected matter, if no exception or waiver applies; or

(iv) subjects a person to undue burden.

(B) When Permitted. To protect a person subject to or affected by a subpoena, the issuing court may, on motion, quash or modify the subpoena if it requires:

(i) disclosing a trade secret or other confidential research, development, or commercial information;

(ii) disclosing an unretained expert's opinion or information that does not describe specific occurrences in dispute and results from the expert's study that was not requested by a party; or

(iii) a person who is neither a party nor a party's officer to incur substantial expense to travel more than 100 miles to attend trial.

(C) Specifying Conditions as an Alternative. In the circumstances described in Rule 45(c)(3)(B), the court may, instead of quashing or modifying a subpoena, order appearance or production under specified conditions if the serving party:

(i) shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship; and

(ii) ensures that the subpoenaed person will be reasonably compensated.

(d) DUTIES IN RESPONDING TO A SUBPOENA.

(1) Producing Documents or Electronically Stored Information. These procedures apply to producing documents or electronically stored information:

(A) Documents. A person responding to a subpoena to produce documents must produce them as they are kept in the ordinary course of business or must organize and label them to correspond to the categories in the demand.

(B) Form for Producing Electronically Stored Information Not Specified. If a subpoena does not specify a form for producing electronically stored information, the person responding must produce it in a form or forms in which it is ordinarily maintained or in a reasonably usable form or forms.

(C) Electronically Stored Information Produced in Only One Form. The person responding need not produce the same electronically stored information in more than one form.

(D) Inaccessible Electronically Stored Information. The person responding need not provide discovery of electronically stored information from sources that the person identifies as not reasonably accessible because of undue burden or cost. On motion to compel discovery or for a protective order, the person responding must show that the information is not reasonably accessible because of undue burden or cost. If that showing is made, the court may nonetheless order discovery from such sources if the requesting party shows good cause, considering the limitations of Rule 26(b)(2)(C). The court may specify conditions for the discovery.

(2) Claiming Privilege or Protection.

(A) Information Withheld. A person withholding subpoenaed information under a claim that it is privileged or subject to protection as trial-preparation material must:

(i) expressly make the claim; and

(ii) describe the nature of the withheld documents, communications, or tangible things in a manner that, without revealing information itself privileged or protected, will enable the parties to assess the claim.

(B) Information Produced. If information produced in response to a subpoena is subject to a claim of privilege or of protection as trial-preparation material, the person making the claim may notify any party that received the information of the claim and the basis for it. After being notified, a party must promptly return, sequester, or destroy the specified information and any copies it has; must not use or disclose the information until the claim is resolved; must take reasonable steps to retrieve the information if the party disclosed it before being notified; and may promptly present the information to the court under seal for a determination of the claim. The person who produced the information must preserve the information until the claim is resolved.

(e) CONTEMPT.

The issuing court may hold in contempt a person who, having been served, fails without adequate excuse to obey the subpoena. A nonparty's failure to obey must be excused if the subpoena purports to require the nonparty to attend or produce at a place outside the limits of Rule 45(c)(3)(A)(ii).

APPENDIX

INSTRUCTIONS AND DEFINITIONS

A. The terms “Insight,” “You,” and “Your” shall refer to Insight Product Development, LLC.

B. The terms “Keurig,” and “Plaintiff,” shall mean Plaintiff, Keurig Corporation, any parent corporations or organizations, predecessor corporations or organizations, successor corporations or organizations, divisions, subsidiaries, affiliated or related companies or organizations, Including, but not limited to, its officers, directors, employees, and agents.

C. The term “the Kraft Defendants” shall mean Defendants Kraft Foods Global, Inc., Tassimo Corporation, and Kraft Foods, Inc.

D. The term “Communication” shall mean, without limitation, the transmission of a word, statement, fact, thing, idea, document (as defined below), instruction, demand or question, Including but not limited to meetings, discussions, conversations, telephone calls, memoranda, letters, telecopies, telexes, conferences or seminars.

E. The term “Document” shall have the broadest possible meaning afforded under the Federal Rules of Civil Procedure and shall include, but not be limited to, every writing or record of any type that is in Your possession, custody, or control and that is kept by electronic, photographic, mechanical, or other means. For purposes of these requests for Documents, any document that contains a note, comment, addition, deletion, modification, or otherwise comprises a non-identical copy of another document shall be treated as a separate document subject to identification.

F. The term “Person” or “Persons” shall mean any natural person, corporation, partnership, proprietorship, association, joint venture, governmental or other public entity, or any

other form of organization or legal entity, and their officials, directions, officers, employees, representatives, and agents.

G. “Concerning” shall mean, without limitation, referring to, alluding to, responding to, relating to, connected with, in connection with, commenting on, in respect of, about, regarding, discussing, showing, describing, mentioning, reflecting, analyzing, constituting, containing, pertaining to, evidencing, supporting or refuting.

H. The term “Patent-in-Suit” shall mean United States Patent No. 6,607,762, entitled “Disposable Single Serve Beverage Cartridge,” which is attached hereto as Exhibit 1

I. The term “Beverage Filter Cartridge” shall mean any cartridge, capsule, pod, or any other container in which soluble beverage medium is stored.

J. The term “N-cup” shall mean the Beverage Filter Cartridge described as the N-cup in the Home Unit Portion Pack Advancement agreement with Keurig attached as Exhibit 2.

K. The term “Prior Art,” shall mean, without limitation, the subject-matter described in 35 U.S.C. §§ 102, 103.

L. The term “Named Inventors” shall mean Nicholas G. Lazaris and Roderick H. Beaulieu.

M. “Any” and “All” shall mean “any and all,” which includes “each and every.”

N. All electronically stored information (“ESI”) must be produced in TIFF format with OCR text in accordance with Rule 33(b)(ii) of the Federal Rules of Civil Procedure, which requires that “a responding party must produce [ESI] . . . in a form or forms that are reasonably usable.”

O. If You withhold any requested Documents by reason of a claim of privilege or attorney work product, or objects to any part of this request for production, You shall furnish a

list identifying each such document for which the claim of privilege is made or to which the objection relates, together with the following information:

- i. the identity of the document, Including the exact name and title of the document, the number of pages, attachments, or appendices to the document, and all serial or identification numbers appearing on the document;
- ii. a general description of the document;
- iii. the name of the writer, sender, or initiator of the document;
- iv. the name of all recipients of the document (Including the addressees and any indicated or blind copies);
- v. the date of the document;
- vi. the number of the Request for Production to which the document relates;
- vii. the reason(s) for each objection or claim of privilege; and
- viii. the identity of each person having knowledge of the actual basis, if any, on which the privilege or other ground for objection is based.

P. The use of the singular form of any word includes the plural and vice versa.

Q. The connectives “and” and “or” shall be construed as broadly as possible so as to bring within the scope of the definitions and document requests all matters which by any other construction would fall outside their scope.

R. “Including” shall be construed to mean “without any limitation.”

S. The past tense shall include the present tense and the present tense shall include the past so as to make the request inclusive rather than exclusive.

T. Pursuant to a Protective Order entered by the United States District Court for the District of Delaware on August 1, 2008, any confidential Documents You produce to the Kraft Defendants in response to this subpoena *duces tecum* may be designated “Confidential” or “Confidential - Attorneys’ Eyes Only.” The Protective Order is attached as Exhibit 3.

SCHEDULE A

DEPOSITION TOPICS

1. The work performed by You Concerning the development and/or commercialization of the N-Cup.
2. The design of the N-cup.
3. Your knowledge of the Kenco Singles™ brewer machine or Kenco Singles™ Beverage Filter Cartridges at the time of Your development work on the N-cup.
4. Communications between You and Keurig Concerning the Kenco Singles™ Beverage Filter Cartridges.
5. Communications between You and Keurig Concerning the development and/or commercialization of the N-cup.
6. Communications between You and the Named Inventors Concerning the development and/or commercialization of the N-cup.
7. Agreement between You and Keurig Concerning the development and/or commercialization of the N-cup.
8. Documents Concerning development work Concerning the inventions claimed in the Patent-in-Suit.
9. The identity of Persons who worked on the development and/or commercialization of the N-cup.
10. The circumstances surrounding Your first learning of the inventions claimed in the Patent-in-Suit.
11. Communications between You and Keurig Concerning the inventions claimed in the Patent-in-Suit.

12. Communications between You and the Named Inventors Concerning the inventions claimed in the Patent-in-Suit.

13. Your knowledge of Prior Art to the inventions claimed in Patent-in-Suit.

14. Your knowledge of a public use, demonstration, sale, or offer for sale Concerning the inventions claimed in the Patent-in-Suit.

SCHEDULE B

REQUESTS

1. All Documents and things Concerning any development work performed by You on behalf of Keurig Concerning the N-Cup.
2. Any Documents Concerning the inventions disclosed in U.S. Provisional Patent Application No 60/183,569 filed on February 18, 2000, a copy of which is attached hereto as Exhibit 4.
3. Any Documents Concerning Persons who participated in the research, design, or development of the N-cup on behalf of Keurig at Insight.
4. All Documents concerning the inventions claimed in U.S. Patent Application No. 09/782,665, filed February 13, 2001, a copy of which is attached hereto as Exhibit 5.
5. All Documents other than Documents responsive to requests 1-4 above, that describe the inventions claimed in the Patent-in-Suit.
6. All Documents and things constituting Communications between Insight and Keurig Concerning the N-cup.
7. All Documents and things Concerning Prior Art to the alleged inventions in the Patent-in-Suit and/or Concerning the Patent-in-Suit, Including, but not limited to the N-cup.
8. All Documents and things Concerning Kenco Singles™ brewing machines and/or Kenco Singles™ Beverage Filter Cartridges.
9. All Documents and things constituting Communications between Insight and Keurig Concerning the N-cup.
10. All Documents and things constituting Communications between the Named Inventors and Insight Concerning the N-cup.

11. All Documents and things constituting Communications between Keurig or the Named Inventors and any Person other than Insight Concerning the N-cup.

12. All Documents Concerning the disclosure, prior to February 13, 2001, of the alleged invention claimed in each claim of the Patent-in-Suit to a Person other than Keurig or its legal counsel, Including, but not limited to, Documents Concerning the N-cup.

13. All Documents and things Concerning the sale or offer for sale, prior to February 13, 2001, of any apparatus that practices the invention claimed in one or more claims of the Patent-in-Suit, Including, but not limited to, Documents Concerning the N-cup.

14. All Documents and things Concerning public use or demonstration, whether experimental or otherwise, of any of the alleged inventions claimed in the Patent-in-Suit, , Including, but not limited to, the N-cup, by the Named Inventors, Keurig or any other Person, prior to February 13, 2001.

15. All Documents published prior to February 13, 2001, which describe any of the alleged inventions claimed in the Patent-in-Suit, Including, but not limited to, the N-cup.

16. All Documents or things created prior to February 13, 2001 or dated prior to February 13, 2001, Concerning the subject matter of any claim during the pendency of U.S. Patent Application No. 09/782,665, which were in Your possession during the pendency of the prosecution of U.S. Patent Application No. 09/782,665, but which were not submitted to the United States Patent and Trademark Office.

17. All Documents and things Concerning Keurig's decision not to commercialize the N-cup.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CERTIFICATE OF SERVICE

I, Richard L. Horwitz, hereby certify that on February 14, 2008, the attached document was electronically filed with the Clerk of the Court using CM/ECF which will send notification to the registered attorney(s) of record that the document has been filed and is available for viewing and downloading.

I further certify that on February 14, 2008, the attached document was Electronically Mailed to the following person(s):

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Karen E. Keller
Young Conaway Stargatt & Taylor
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EXHIBIT 1



US006607762B2

(12) **United States Patent**
Lazaris et al.

(10) Patent No.: **US 6,607,762 B2**
(45) Date of Patent: **Aug. 19, 2003**

(54) **DISPOSABLE SINGLE SERVE BEVERAGE
FILTER CARTRIDGE**

(75) Inventors: **Nicholas G. Lazaris**, Newton, MA
(US); **Roderick H. Beaulieu**,
Cumberland, RI (US)

(73) Assignee: **Keurig, Incorporated**, Wakefield, MA
(US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 11 days.

(21) Appl. No.: **09/782,665**

(22) Filed: **Feb. 13, 2001**

(65) **Prior Publication Data**

US 2001/0048957 A1 Dec. 6, 2001

Related U.S. Application Data

(60) Provisional application No. 60/183,569, filed on Feb. 18,
2000.

(51) Int. Cl.⁷ **B65B 29/02**

(52) U.S. Cl. **426/79; 426/113; 426/115;
426/433; 99/295; 99/317; 206/0.5; 206/222**

(58) Field of Search **99/293-295, 323,
99/317; 426/77, 79, 81, 433, 435, 106,
113, 115; 206/0.5, 219, 222**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,300,308 A * 4/1994 Louridas 426/112

5,325,765 A 7/1994 Sylvan et al. 99/295
5,431,276 A * 7/1995 Lialin 206/222
5,762,987 A * 6/1998 Fond et al. 426/433
5,840,189 A 11/1998 Sylvan et al. 210/474
5,899,137 A * 5/1999 Miller et al. 99/295
6,007,853 A * 12/1999 Lesser 426/77

* cited by examiner

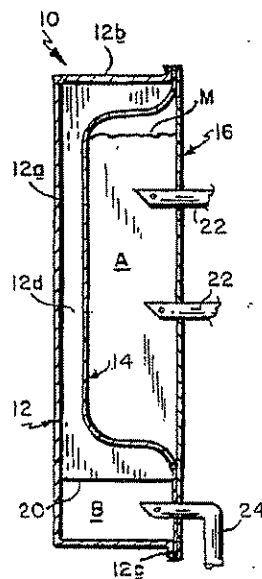
Primary Examiner—Drew Becker

(74) Attorney, Agent, or Firm—Samuels Gauthier &
Stevens

(57) **ABSTRACT**

A beverage filter cartridge comprises an outer container with an access opening. A filter element is received in and configured and arranged to subdivide the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A lid closes the access opening. The lid has a first section overlying the first chamber and a second section overlying the second chamber. The first section of the lid is yieldably piercable to accommodate an inflow of liquid into the first chamber for infusion with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the second section of the lid is yieldably piercable to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge.

10 Claims, 5 Drawing Sheets



U.S. Patent

Aug. 19, 2003

Sheet 1 of 5

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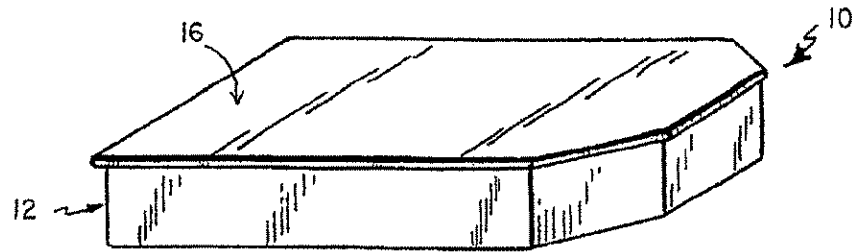


FIG. 1

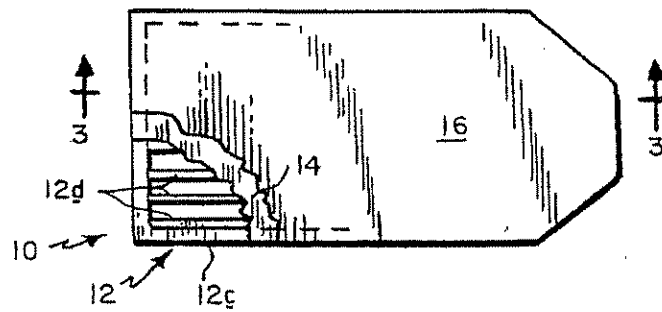


FIG. 2

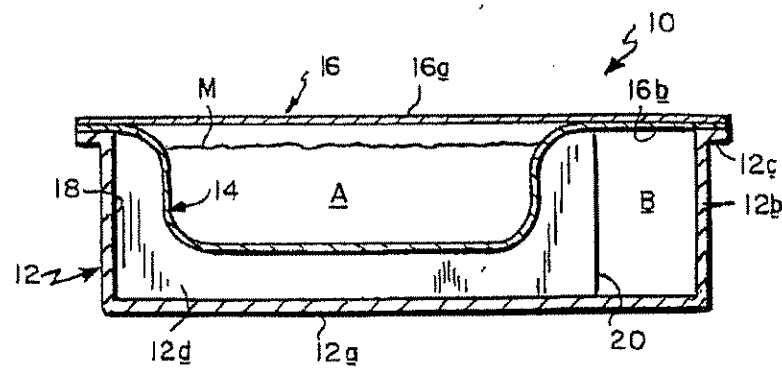


FIG. 3

U.S. Patent

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Sheet 2 of 5

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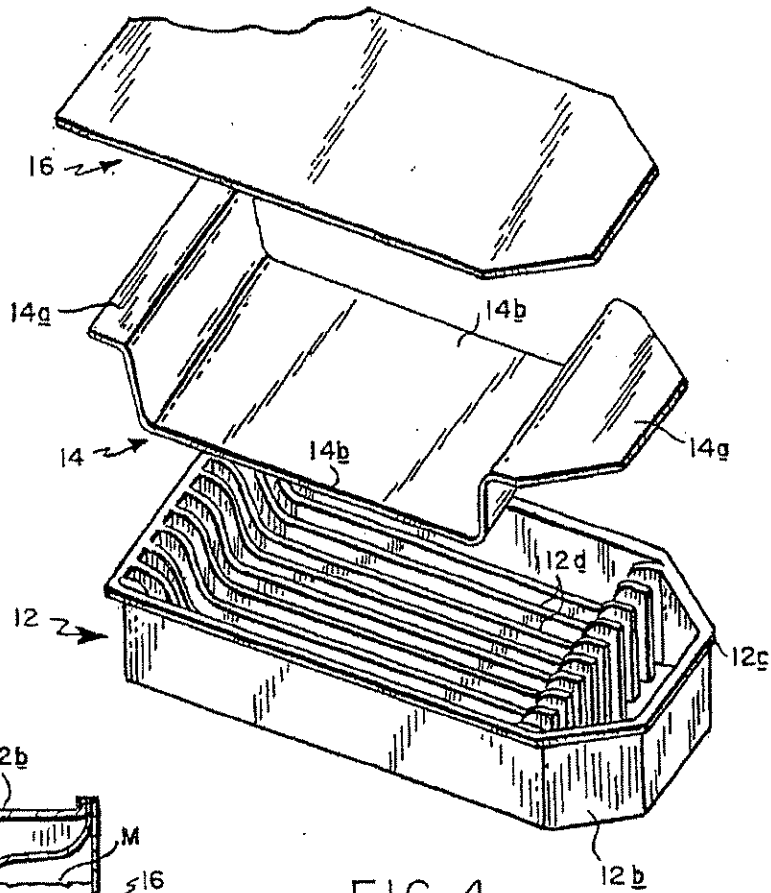


FIG. 4

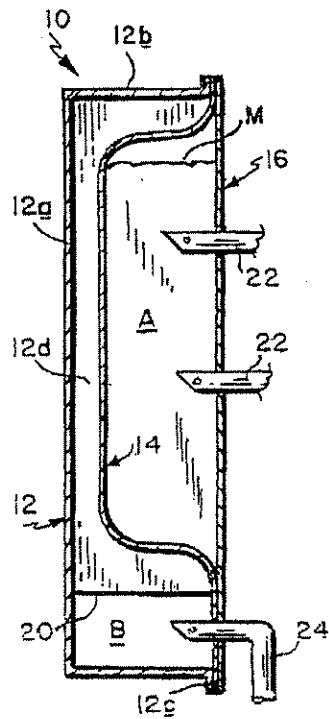


FIG. 5

U.S. Patent

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Sheet 3 of 5

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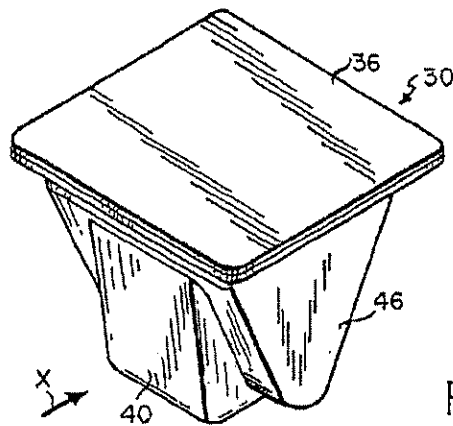


FIG. 6

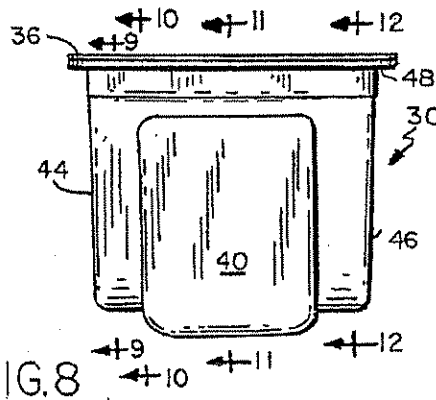


FIG. 8

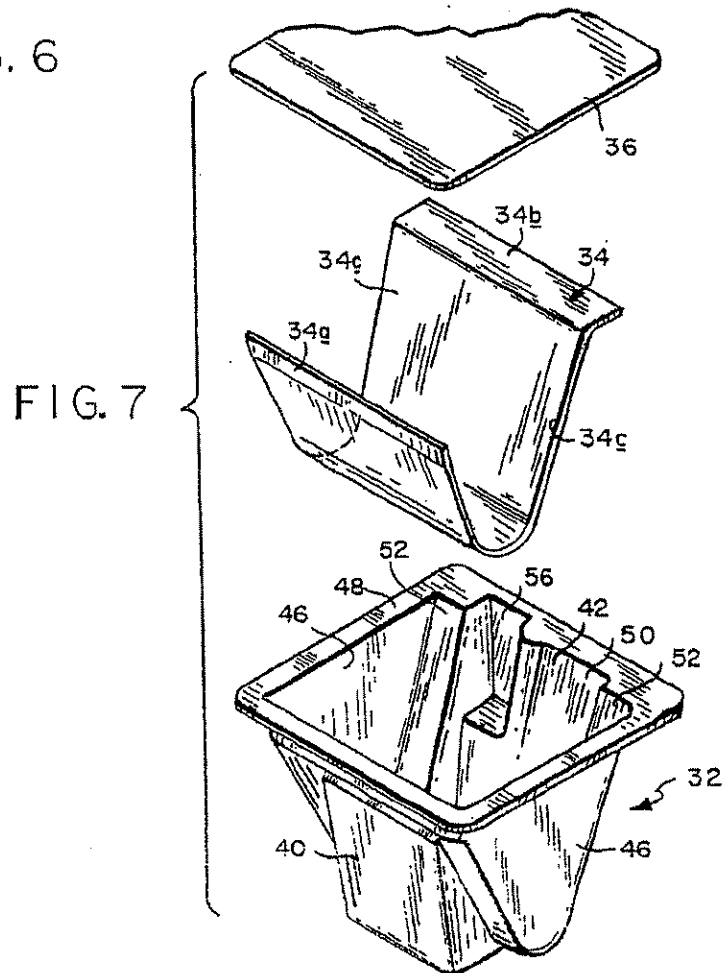


FIG. 7

U.S. Patent

Aug. 19, 2003

Sheet 4 of 5

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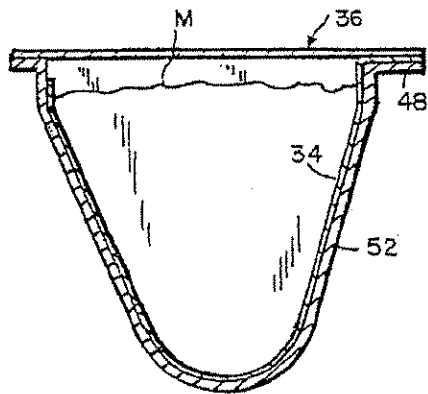


FIG. 9

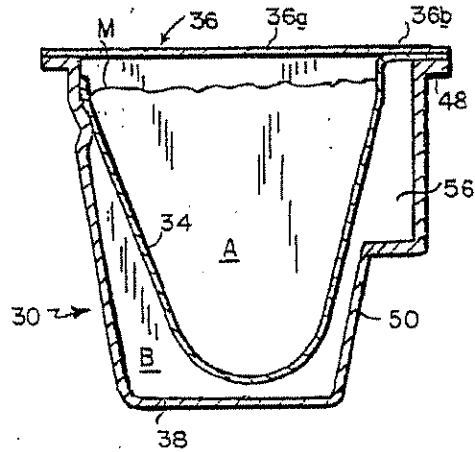


FIG. 10

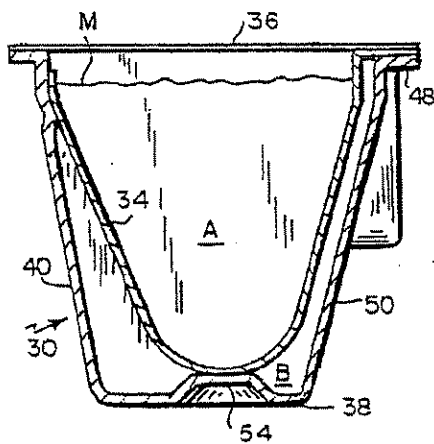


FIG. 11

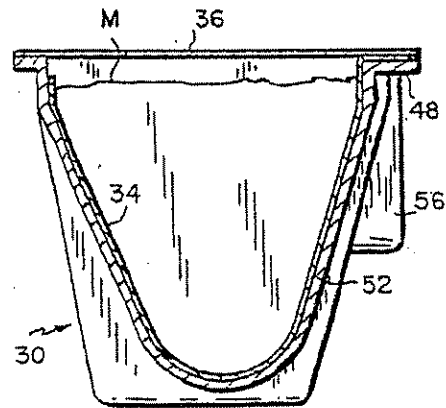


FIG. 12

U.S. Patent

Aug. 19, 2003

Sheet 5 of 5

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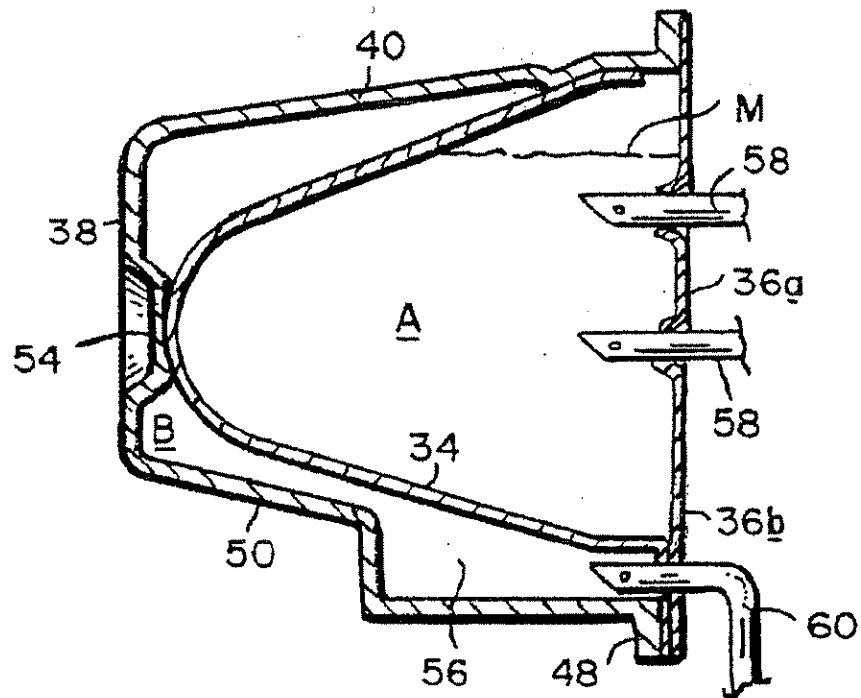


FIG. 13

US 6,607,762 B2

1

DISPOSABLE SINGLE SERVE BEVERAGE FILTER CARTRIDGE

CROSS REFERENCES TO RELATED APPLICATIONS

This application claims priority from Provisional Patent Application Serial No. 60/183,569 filed Feb. 18, 2000.

FIELD OF THE INVENTION

This invention relates to disposable single serve beverage filter cartridges.

DESCRIPTION OF THE PRIOR ART

A known disposable single serve beverage filter cartridge is disclosed in U.S. Pat. Nos. 5,325,765 and 5,840,189 (Sylvan et al), dated respectively Jul. 5, 1994 and Nov. 24, 1998. This beverage filter cartridge is comprised basically of an impermeable yieldably piercable cup-shaped container thermoformed or injection molded from a relatively rigid plastic material, and internally subdivided by a permeable cone-shaped filter into first and second chambers. A granular or powdered dry beverage medium, e.g., roasted ground coffee, is stored in the first chamber, and the container is closed by an impermeable yieldably piercable lid comprising a laminate of metallic foil and plastic.

During a brewing cycle, the lid and container bottom are pierced from opposite directions, respectively, by tubular inlet and outlet probes. The inlet probe admits heated liquid into the first chamber for infusion with the beverage medium, and the resulting brewed beverage passes through the filter into the second chamber from which it exits via the outlet probe for delivery to an underlying cup.

This known beverage filter cartridge has gained rapid and increasingly widespread acceptance, notwithstanding certain problems and disadvantages relating to its use that have persisted since its initial introduction.

For example, as compared to the lid, the bottom of the cup-shaped container is relatively thick, with a higher resistance to piercing. The bottom cannot easily be thinned without adversely affecting the required thickness of the cup's sidewall to prevent permeability to oxygen and the ability to connect the filter material to the sidewall without damaging the oxygen barrier material. Thus, in the course of being punctured by the outlet probe, the bottom exhibits a tendency to distort inwardly, with an accompanying buckling of the container sidewall. Bottom distortion accompanied by sidewall buckling can adversely affect the puncturing process, resulting in leakage around the outlet probe.

A related problem stems from the need to equip the brewers with expensive metallic outlet probes that can be sharpened to the extent necessary to effect piercing of the more resistant container bottoms, and that can resist wear over prolonged periods of use.

Additionally, some of the brewed liquid beverage is not able to be evacuated because the outlet probe opening is above the bottom of the container and some of the beverage has no means of drainage.

What is needed, therefore, is an improved beverage filter cartridge that obviates or at least significantly minimizes the above-noted problems and disadvantages.

SUMMARY OF THE INVENTION

In accordance with the present invention, a beverage filter cartridge includes an impermeable outer container having an

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access opening. A planar filter element is configured and arranged to subdivide the container interior into first and second chambers. A beverage medium is stored in the first chamber and an impermeable lid closes the access opening.

The lid has a first section overlying the first chamber and a second section overlying the second chamber. The first and second lid sections are yieldably piercable, respectively, from the same direction, by single or multiple inlet and outlet probes. The inlet probe admits heated liquid into the first chamber for infusion with the beverage medium, and the resulting brewed beverage passes through the filter element into the second chamber, from which it exits via the outlet probe.

The lid material has a lesser resistance to being yieldably pierced as compared to the resistance of the container bottom, and is thus less prone to inward distortion with accompanying buckling of the container sidewall. The net result is a cleaner puncture and an improved seal around the outlet probe.

The relative ease with which the lid may be pierced also makes it possible to equip the brewers with less expensive plastic inlet and outlet probes, in single or multiple configurations.

These and other features and advantages of the present invention will now be described in greater detail with reference to the accompanying drawings, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of a beverage filter cartridge in accordance with the present invention;

FIG. 2 is a top plan view of the beverage filter cartridge shown in FIG. 1, with portions of the lid and filter element broken away to illustrate details of the container interior;

FIG. 3 is a sectional view on an enlarged scale taken along line 3—3 of FIG. 2;

FIG. 4 is an exploded view of the basic components comprising the beverage filter cartridge shown in FIGS. 1-3;

FIG. 5 is a cross sectional view similar to FIG. 3 showing the lid of the beverage filter cartridge punctured by inlet and outlet probes during a beverage brewing cycle;

FIG. 6 is a perspective view of another embodiment of a beverage filter cartridge in accordance with the present invention;

FIG. 7 is an exploded view of the basic components of the beverage filter cartridge shown in FIG. 6;

FIG. 8 is a side view of the beverage filter cartridge looking in the direction of arrow "X" in FIG. 6;

FIGS. 9, 10, 11 and 12 are sectional view on an enlarged scale taken respectively along lines 9—9, 10—10, 11—11 and 12—12 of FIG. 8; and

FIG. 13 is a sectional view similar to FIG. 10 showing the lid of the beverage filter cartridge punctured by inlet and outlet probes during a beverage brewing cycle.

DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

Referring initially to FIGS. 1-5, one embodiment of a beverage filter cartridge in accordance with the present invention is generally depicted at 10. The beverage filter cartridge includes an impermeable outer container 12, a permeable filter element 14, and an impermeable lid 16.

The outer container 12 is generally tray-shaped with a bottom wall 12a, a side wall 12b with a flat rim 12c

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surrounding an access opening 13, and a plurality of laterally spaced support ribs 12d projecting upwardly from the bottom wall and extending in parallel relationship in the lengthwise direction of the container.

As shown in FIG. 3, the ribs 12d join the sidewall 12b at 18, curve downwardly and then extend in parallel relationship to the bottom 12a before again curving upwardly to terminate as at 20.

The filter element 14 is formed from sheet material shaped to conform to the shape of the upper edges of the support ribs. The filter element is received in the container 12, with the edges 14a of its front and back ends overlapping and sealed to the rim 12c of the container side wall 12b, and with the edges 14b of its sides overlapping and sealed to outermost ribs 12d which are formed integrally with the container side wall. When thus positioned, the filter element defines a first chamber "A" separate from a second chamber "B", the latter being in communication with open channels separating the support ribs 12d.

A beverage medium "M", typically roasted ground coffee, is loaded into chamber A, after which the lid 16 is sealed to the rim 12c of the container wall 12b (and to any overlapping sealed edge portions of the filter). When thus positioned, the lid has a first section 16a overlying chamber A, and a second section 16b overlying chamber B.

The outer container may be formed, typically by injection molding, from an impermeable heat sealable material.

The filter element 14 may be cut or blanked from any suitably pliable, permeable and yieldably pierceable sheet material, a preferred example being cellulose polypropylene supplied by J. P. Crompton, Ltd. of Bury, Lancashire, England. The lid may be cut or blanked from any suitable impermeable heat sealable and yieldably pierceable material, a preferred example being a metallic/polymer laminate supplied by Heat Seal-Winpak, Ltd. of Montreal, Canada. The lid has less resistance to being yieldably pierced as compared to the outer container, which may or may not be yieldably pierceable.

During a brewing cycle, as shown in FIG. 5, the cartridge can be oriented vertically, and the lid 16 is pierced with one or more tubular infusion probes 22 to admit hot water under pressure into chamber A for infusion with the beverage medium M. The resultant beverage passes through the filter element 14 into the channels defined between the support ribs 12d. From here, the beverage flows downwardly into chamber B from which it is extracted by one or more tubular exit probes 24 which pierce the lid and filter element at a location overlying chamber B. The probes 22, 24 are oriented in the same direction to operate on one side of the cartridge, without piercing the outer container. The soluble beverage medium is completely soaked because the rate of hot water being injected into the container is greater than the outflow rate provided by the outlet probes, resulting in the second chamber B becoming filled with beverage extract and forcing the first chamber A to become completely filled with hot water.

Although not shown, it will be understood that the cartridge may be oriented in other ways than as illustrated in FIG. 5 before, during or after the brewing process.

A second embodiment of a beverage filter cartridge in accordance with the present invention is generally depicted at 30 in FIGS. 6-13. The cartridge components are illustrated separately in FIG. 7, and include an outer container 32, a planar filter element 34, and a lid 36.

The container 32 has a bottom wall 38, a front wall 40, a back wall 42, and side walls 44, 46. The front, back and

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sidewalls extend upwardly from the bottom wall to a peripheral rim 48 surrounding an upper opening 50.

The side walls 44, 46 are appropriately contoured to define generally V-shaped ledges 52 extending between the front and back walls 40, 42, with the lower portions of the ledges 52 being spaced above the container bottom 38. The bottom 38 is preferably contoured to provide an upwardly protruding centrally located boss 54. The back wall 42 is contoured and the upper rim 48 is recessed to provide a well 56 opening towards the interior of the container.

The filter element 34 has front and back edge regions 34a, 34b, and side edge regions 34c. The filter element is configured, dimensioned and operatively positioned to subdivide the interior of the container into first and second chambers "A", "B", with the well 56 opening into and forming part of chamber B. When the filter element is thus positioned, it will be understood that its side edge regions 34c are secured as by heat sealing to the ledges 52 of the side walls 44, 46, and the front and back edge regions 34a, 34b are similarly secured to the front and back walls 40, 42. Preferably, the bottom of the filter element is also secured as by heat sealing to the upwardly protruding boss 54.

A beverage medium "M" is received through the upper opening 50 and stored in the first chamber A. The upper opening is then closed by securing the lid 36, as by heat sealing, to the peripheral container rim 48.

The outer container may be formed from impermeable heat sealable materials, a preferred example being polyethylene/EVOH/polystyrene supplied by Curwood Flexible Packaging of Oshkosh, Wis., U.S.A.

The materials from which the filter element 34 and lid 36 are formed may be the same as those described previously for the filter element 14 and lid 16 of the first embodiment.

The lid 36 has a first section 36a overlying chamber A, and a second section 36b overlying the well 56.

As shown in FIG. 13, at the onset of a brewing cycle, the lid section 36a is pierced by one or more inlet probes 58, and the lid section 36b and underlying portion of the filter element are pierced by an outlet probe 60. The inlet probe admits heated liquid into chamber A for infusion with the beverage medium M, and the resulting brewed beverage passes through the filter element into chamber B from which it exits via the outlet probe 60.

It will thus be seen that in both embodiments, the outer container is not pierced. Rather, liquid communication is established with the separate chambers A, B by inlet and outlet probes operating from the same side of the cartridge to pierce different sections of the readily pierceable lid.

Although the outer container and lid have been described as being formed from impermeable materials, it will be understood by those skilled in the art that, alternatively, permeable materials may be employed for one or both of these components. Where permeable materials are employed, the completed cartridges will preferably be subsequently enclosed, either individually or in batches, with impermeable wrappings. Materials for such wrappings are well known, and include for example EVOH films, aluminum foil, etc.

We claim:

1. A beverage filter cartridge comprising:

an outer container having an access opening;

a filter element received in and configured and arranged to subdivide the interior of said container into first and second chambers;

a soluble beverage medium stored in said first chamber; and

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a lid closing said access opening, said lid having a first section overlying said first chamber and a second section overlying said second chamber, the first section of said lid being piercable to accommodate an inflow of liquid into said first chamber for infusion with the beverage medium to produce a beverage, said filter element being permeable to liquid to accommodate a flow of the beverage from said first chamber into said second chamber, and the second section of said lid being piercable to accommodate an outflow of the beverage from said second chamber to the exterior of said cartridge.

2. The beverage filter cartridge of claim 1 wherein said lid has less resistance to being pierced as compared to the resistance to piercing of said container.

3. The beverage filter cartridge of claim 1 wherein said filter element is piercable.

4. The beverage filter cartridge of claim 1 wherein a first section of said filter element coacts with interior surfaces of said container to define said first chamber, and a second section of said filter element underlies the second section of said lid.

5. The beverage filter cartridge of claim 1 wherein said container is provided with a flat rim surrounding and projecting outwardly from said access opening, and wherein edge segments of said filter element overlap and are heat sealed to segments of said rim.

6. The beverage filter cartridge of claim 4 wherein the second sections of both said lid and said filter element are piercable to accommodate the beverage outflow from said second chamber.

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7. The beverage filter cartridge of claim 1 wherein said filter element comprises a planar sheet of permeable piercable material.

8. The beverage filter cartridge of claim 1 wherein said outer container is impermeable to liquids and gases.

9. The beverage filter cartridge of claim 1 or 8 wherein said lid is impermeable to liquids and gases.

10. A beverage filter cartridge comprising:

an outer container having a access opening;

a planar filter element received in and configured and arranged to subdivide the interior of said container into first and second chambers;

a soluble beverage medium stored in said first chamber; and

a lid closing said access opening, said lid and said outer container being impermeable to liquids and gases, said lid having first section overlying said first chamber and a second section overlying said second chamber, the first section of said lid being piercable to accommodate an inflow of liquid into said first chamber for infusion with the beverage medium to produce a beverage, said filter element being permeable to liquid to accommodate a flow of the beverage from said first chamber into said second chamber, and the second section of said lid being piercable to accommodate an outflow of the beverage from said second chamber to the exterior of said cartridge, said lid having less resistance to being pierced as compared to the resistance to piercing of said container.

* * * * *

EXHIBIT 2

**THIS EXHIBIT HAS BEEN
REDACTED IN ITS ENTIRETY**

EXHIBIT 3

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

KEURIG, INCORPORATED,

Plaintiff,

v.

KRAFT FOODS GLOBAL, INC.,
TASSIMO CORPORATION, and
KRAFT FOODS INC.,

Defendants.

Civil Action No. 07-017-GMS

STIPULATED PROTECTIVE ORDER

The parties anticipate that discovery in this case will involve the disclosure of confidential or highly confidential information, including trade secrets and other confidential research, development, product, marketing, financial or commercial information, and therefore agree to the following Protective Order under Rule 26 of the Federal Rules of Civil Procedure.

1. Designation of Confidential Material.

(a) General. Any documents, materials, tangible things, items, testimony or other information filed with the Court, or produced or provided by any party in this litigation or third party in connection with this litigation ("Producing Party" or "Designating Party") to a party in this litigation ("Receiving Party"), may be designated as "Confidential" or "Confidential - Attorneys' Eyes Only." All such information and material derived from it constitutes "Designated Material" under this Protective Order.

(b) Confidential Designation. A Designating Party may designate as "Confidential" any document, material, item, deposition testimony, or information that is filed

with the Court or produced in discovery in this action and is or contains confidential technical, research, development, private, financial, or commercial information of the Designating Party.

(c) Confidential - Attorneys' Eyes Only Designation. A Designating Party may designate as "Confidential - Attorneys' Eyes Only" any document, material, item, deposition testimony, or information that is filed with the Court or produced in discovery in this action and is or contains highly confidential research, development, product, marketing, financial, commercial, or proprietary information, the disclosure of which, to persons other than those described in Paragraph 4 below, the Designating Party in good faith believes could be likely to harm the Designating Party's competitive position.

(d) Designation Procedure. A party wishing to invoke the provisions of this Protective Order shall designate the documents, materials, items or information, or portions thereof, at the time such information is disclosed, or when the party seeking protection becomes aware of the nature of the information disclosed and sought to be protected. Designation shall be made by marking or stamping the documents, materials, items or information "Confidential" or "Confidential - Attorneys' Eyes Only" on all pages (or, if applicable, paragraphs). In the case of information stored on electronic media, the items produced shall be marked or stamped on the media if technically and economically feasible. In the case of information produced for inspection, but not yet provided to the inspecting party, such information shall presumptively be deemed "Confidential - Attorneys' Eyes Only," regardless of whether so identified, until copies thereof are produced to the inspecting party. The designation of "Confidential" or "Confidential - Attorneys' Eyes Only" shall be understood to encompass not only the material expressly designated, but also any information developed therefrom, and all copies, recordings, abstracts, excerpts, analysis, and summaries thereof, as well as testimony and oral conversations derived

therefrom and related thereto. However, nothing in this Protective Order shall bar or otherwise restrict any outside counsel or in-house counsel from discussing this Action or rendering legal advice to his or her client with respect to this litigation and, in the course thereof, relying upon his or her examination of Confidential materials or Confidential - Attorneys' Eyes Only Material, provided that in rendering such advice or in other communication with his or client, such counsel shall not make any disclosure of "Confidential" materials or "Confidential - Attorneys' Eyes Only" material to any person not entitled to have access to it.

(e) Designation Procedure For Deposition Testimony. With respect to deposition testimony, the witness under deposition, or his/her counsel, or any counsel representing any person at the deposition, shall invoke the provisions of this Protective Order in a timely manner, giving adequate warning to all persons present that testimony about to be given or solicited is "Confidential" or "Confidential - Attorneys' Eyes Only." The provisions of this paragraph may be invoked with respect to the witness's entire deposition, or any portion thereof, at any time during the deposition. Counsel attending a deposition who inadvertently fails to designate any portion of the deposition transcript pursuant to this Protective Order on the record at the deposition shall have thirty (30) days following mailing of the transcript by the court reporter in which to correct the failure. Notice of such correction shall be made in writing to the reporter, with copies to all other counsel of record, designating the portion(s) of the transcript that contain confidential information, and directing that such portion(s) of the transcript be marked accordingly. Until such thirty (30) days after mailing of the transcript by the court reporter has passed, the entire transcript shall be treated as "Confidential - Attorneys' Eyes Only."

2. Use of Designated Material. Designated Material shall be used by a Receiving Party solely for purposes of this litigation, and not for another litigation, business, competitive, or governmental purpose or function, and such information shall not be disclosed to anyone except as provided under this Protective Order.

3. Access to Material Designated "Confidential." In the absence of express written permission from the producing party or an Order of this Court, material designated "Confidential" under this Protective Order, and copies, extracts, compilations, summaries and other materials that include or reflect such Designated Material, may be given, shown, made available, or communicated in any way only to those persons authorized to receive material designated "Confidential - Attorneys' Eyes Only" as set forth below, and up to three employees of the Parties, but subject to and only after compliance with the provisions of Paragraph 7 below. Material designated "Confidential" may be submitted to the Court only if submitted under seal in accordance with Paragraph 9 below.

4. Access to Material Designated "Confidential - Attorneys' Eyes Only." In the absence of express written permission from the Producing Party or an Order of this Court, material designated "Confidential - Attorneys' Eyes Only" under this Protective Order, and copies, extracts, compilations, summaries, and other materials that include or reflect such Designated Material, may be given, shown, made available, or communicated in any way only to:

- (a) outside litigation attorneys for the parties who are attorneys of record in this case and their staffs, including outside vendors that may be necessary for litigation support;
- (b) qualified persons taking testimony involving "Confidential - Attorneys' Eyes Only" information, and necessary stenographic and clerical personnel thereof;

(c) the Receiving Party's independent consultants or experts and their staffs ("Experts"), who have been retained for the purpose of this Action by the Receiving Party, but subject to and only after compliance with the provisions of Paragraph 7 below, and with disclosure only to the extent necessary to perform such work;

(d) any mediator retained by the parties jointly or appointed by the Court, provided that such mediator has a duty of confidentiality; and

(e) the Court and its staff.

5. Access to Designated Material. In addition, Designated Material (Confidential or Confidential -Attorneys' Eyes Only) may be shown to persons identified on the face of the material or the metadata as authors or recipients of the Designated Material during deposition or trial testimony and in the course of reviewing transcripts of such testimony with outside trial counsel, however, such authors and recipients shall not, without written approval from the Designating Party, remove copies of Designated Material from the location of their testimony or the office of the outside counsel assisting in the review of any transcript. In addition, such authors and recipients, may not, without written approval from the Designating Party, retain copies of any Designated Material or notes disclosing the contents of such Designated Material.

6. Prohibition To Assisting Or Participating In Patent Prosecution . During the pendency of this Action and for a period of one (1) year following its full final conclusion (including appeals) as to each party, any person who receives any "Confidential" or "Confidential - Attorneys' Eyes Only" material shall not directly or indirectly assist or participate in the drafting, filing, or prosecution of any part of any patent application that claims priority to the patent-in-suit (U.S. Patent No. 6,607,762), or any parent, continuation, continuation-in-part, division, reissue, reexamination or foreign counterpart of the patent-in-suit.

This provision, however, does not limit or restrict Keurig's obligation to notify the United States Patent and Trademark Office ("USPTO") of the existence of this patent litigation, prior art cited during this Action, or any invalidity contention made by the defendants that would give rise to a duty to disclose information to the USPTO.

7. Clearance Procedure for Experts and Employees of the Parties. Designated Material may be provided to an independent Expert and up to three employees of the Parties only after ten (10) business days following written notice to the Designating Party of the proposed disclosure to the Expert or employee of a Party. With the written notice shall be included a fully executed copy of the Acknowledgement attached hereto as Exhibit A, completed by the Expert or employee of a Party. If the Designating Party objects, in writing, to disclosure of Designated Material to the Expert or employee of a Party within the ten (10) day period, no disclosure of Designated Material may be made to the Expert or employee of a Party. If the parties cannot resolve the issue, the party objecting to the proposed disclosure may thereupon seek an appropriate order from the Court disqualifying the Expert or protecting against the proposed disclosure to the Expert or employee of a Party. Until the Court rules on the matter, no disclosure of Designated Material to the Expert or employee of a Party shall be made.

8. Treatment of Designated Material. Copies of Designated Material may only be made where reasonably necessary to prepare work product or conduct proceedings in this litigation.

9. Filing of Designated Material with the Court. Where filed with the Court (as pleadings or evidence), Designated Material shall be delivered sealed to the Clerk of the Court and shall not be available to public inspection. Envelopes or containers used to seal such documents shall bear the notation, "THIS DOCUMENT CONTAINS CONFIDENTIAL

INFORMATION AND IS BEING SUBMITTED UNDER SEAL PURSUANT TO A PROTECTIVE ORDER” and shall state the party or person who designated any confidential information that the document contains. Where appropriate, the envelope or container shall bear the additional notation, “CONFIDENTIAL - ATTORNEYS’ EYES ONLY.” No such sealed envelope or container shall be provided to any individual not otherwise permitted to view the relevant Designated Material under this Protective Order.

10. Errors in Designation. A Producing Party that inadvertently fails to designate an item pursuant to this Protective Order at the time of the production shall make a correction promptly after becoming aware of such error. Such correction and notice thereof shall be made in writing accompanied by substitute copies of each item, appropriately designated. Those individuals who reviewed the documents or information prior to notice of the failure to designate by the Producing Party shall, to the extent reasonably feasible, return to the Producing Party or destroy all copies of such undesignated documents and shall honor the provisions of this Protective Order with respect to the use and disclosure of any confidential information contained in the undesignated documents, from and after the date of designation.

11. Improper Disclosure. If information designated pursuant to this Protective Order is disclosed to any person other than in the manner authorized by this Protective Order, the party responsible for this disclosure must immediately bring all pertinent facts relating to such disclosure to the attention of the Designating Party, without prejudice to other rights and remedies of the Designating Party, and shall make every effort to prevent further improper disclosure.

12. Objections to Designations. If at any time during the pendency of this litigation any party claims that information is not appropriately designated (the “Objecting Party”), the

Objecting Party may serve a captioned notice of objection on the Designating Party. Within ten(10) calendar days of receiving such notice, the Designating Party shall respond in writing. If the Designating Party and the Objecting Party cannot resolve the dispute by informal conference, the Objecting Party may move for an order from the Court for re-designation within ten (10) calendar days from service of the Designating Party's written response. The original designation shall remain effective until three (3) days after the Court's entry of an order re-designating the materials.

13. Use of Designated Material at Trial. If a party seeks to introduce Designated Material into evidence at trial, that party shall promptly inform the Court of the confidential nature of the information and request that only the jury, Court personnel, and those persons permitted access to such information under this Protective Order be present in the courtroom during the presentation of such evidence. The designation of trial transcripts shall be handled in the same manner as deposition transcripts unless the Court sets a different procedure for trial.

14. Inadmissibility of Designation. Unless the parties stipulate otherwise, evidence of the existence or nonexistence of a designation under this Protective Order shall not be admissible for any purpose, nor shall the designation or acceptance of any information designated pursuant to this Protective Order constitute an admission or acknowledgement that the material so designated is in fact proprietary, confidential or a trade secret.

15. Inadvertent Production. Counsel shall make their best efforts to identify materials protected by the attorney-client privilege or the work product doctrine prior to the disclosure of any such materials. The inadvertent production of any document or thing shall be without prejudice to any claim that such material is protected by the attorney-client privilege or protected from discovery as work product and no Producing Party shall be held to have waived any rights

hereunder by inadvertent production. If a Producing Party discovers that materials protected by attorney-client privilege or work product doctrine have been inadvertently produced, counsel for the Producing Party shall promptly give written notice to counsel for the Receiving Party. The Receiving Party shall take prompt steps to ensure that all known copies of such material are returned to the Producing Party. The Receiving Party may afterward contest such claims of privilege or work product as if the materials had not been produced, but shall not assert that a waiver occurred as a result of the production.

16. Final Disposition of Designated Material. Upon termination of this litigation following settlement or final judgment (including exhaustion of all appeals), the originals and all copies of Designated Material shall be either destroyed or turned over to the Producing Party, or to its counsel, within sixty (60) days. However, attorneys of record may retain pleadings, attorney and consultant work product, and depositions (with exhibits) for archival purposes. If Designated Material is destroyed pursuant to this Paragraph, counsel shall provide to opposing counsel a certification identifying when and how the destruction was performed.

17. Survival. The terms of this Protective Order shall survive termination of this litigation.

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DATED: July 31, 2007

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SO ORDERED:

DATED: _____, 2007

United States District Court Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

KEURIG, INCORPORATED,

Plaintiff,

v.

KRAFT FOODS GLOBAL, INC.,
TASSIMO CORPORATION, and
KRAFT FOODS INC.,

Defendants.

Civil Action No. 07-017-GMS

ACKNOWLEDGEMENT

I, _____, declare as follows:

1. My present employer is _____.
2. My business address is _____.
3. My occupation is _____.
4. In the past 12 months, I have consulted and/or served as an expert for the following companies (attach additional sheets if necessary): _____

5. I have reviewed a copy of the Protective Order in this action, and I understand and agree to be bound by its terms and provisions.

6. I will hold in confidence, will not disclose to anyone not qualified or cleared under the Protective Order, and will use only for approved purposes in this litigation, any "Confidential" or "Confidential - Attorneys' Eyes Only" information which is disclosed to me.

7. I will return all "Confidential" or "Confidential - Attorneys' Eyes Only" information which comes into my possession, and all documents or things which I prepare relating thereto, to outside litigation counsel for the party by whom I am employed or retained.

8. I hereby submit myself to the jurisdiction of the United States District Court for the District of Delaware for the purpose of enforcement of the Protective Order in this litigation.

9. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

DATED: _____

EXHIBIT 4

5446
N-Cup

PROVISIONAL PATENT APPLICATION
OF
NICHOLAS G. LAZARIS
AND
RODERICK H. BEAULIEU
FOR
BEVERAGE FILTER CARTRIDGE

5446
N-Cup

This invention relates generally to beverage filter cartridges of the type described in U.S. Patent No. 5,840,189, the disclosure of which is herein incorporated by reference.

A preferred embodiment of the invention is disclosed in the accompanying drawings,
5 wherein:

Figure 1 is a top plan view of the beverage filter cartridge;

Figure 2 is a longitudinal sectional view taken along line 2-2 of Figure 1;

Figure 3 is an exploded perspective view of the filter cartridge components; and

10 Figure 4 is a view similar to Figure 2 showing the beverage filter cartridge in use during a brewing cycle.

Referring now to the drawings, a beverage filter cartridge in accordance with the present invention is generally depicted at 10. The cartridge includes an outer container 12, a filter element 14 and a lid 16.

15 The outer container 12 is generally tray-shaped, with a bottom wall 12a, a side wall 12b, and a series of laterally spaced support ribs 12c projecting upwardly from the bottom wall and extending in parallel relationship in the lengthwise direction of the container.

As can be best seen in Figure 2, the ribs 12c join the side wall 12 as at 18, and curve downwardly and then extend in parallel relationship to the bottom wall before again curving
20 upwardly to terminate as at 20, thereby forming an open exit chamber B.

The filter element 14 is formed from sheet material shaped to conform to the shape of the upper edges of the support ribs. The filter element is received in the container 12, with the edges 14a of its ends overlapping and sealed to the upper edge of the container side wall 12b, and with the edges 14b of its sides overlapping and sealed to outermost ribs 12c which project integrally

5446
N-Cup

from the container side wall. When thus positioned, the filter element defines an inner chamber A separate from the exit chamber B.

A beverage extract, typically ground coffee, is loaded into chamber A, after which the lid 16 is sealed to the upper edge of the container wall 12b (and over any overlapping sealed edge portions of the filter).

The outer container 12 and lid 16 are impermeable, with the latter additionally being yieldably pierceable. The filter element 14 is permeable.

During a brewing cycle, as shown in Figure 4, the cartridge is oriented vertically, and the lid 16 is pierced with one or more tubular infusion needles 22 to admit hot water under pressure into chamber A for infusion into the coffee contained therein. The resultant beverage passes through the filter 14 into the channels defined between the support ribs 12c. From here, the beverage flows downwardly into chamber B from which it is extracted by one or more tubular exit needles 24 which pierce the lid at a location overlying chamber B.

The generally rectangular and flat configuration of the cartridge offers a number of advantages. For example, both inlet and exit piercing can be achieved through the lid 16 on the same side of the cartridge.

- This allows for more economical piercing methods since the lid is easier to puncture than the outer container.
- Multiple inlet punctures allow for more thorough wetting of extract material.
- The cartridge is easier to handle/package/vend.

Other advantages include:

- Forming the filter by simple bending from a planar sheet, making manufacturing easier and more economical.

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N-Cup

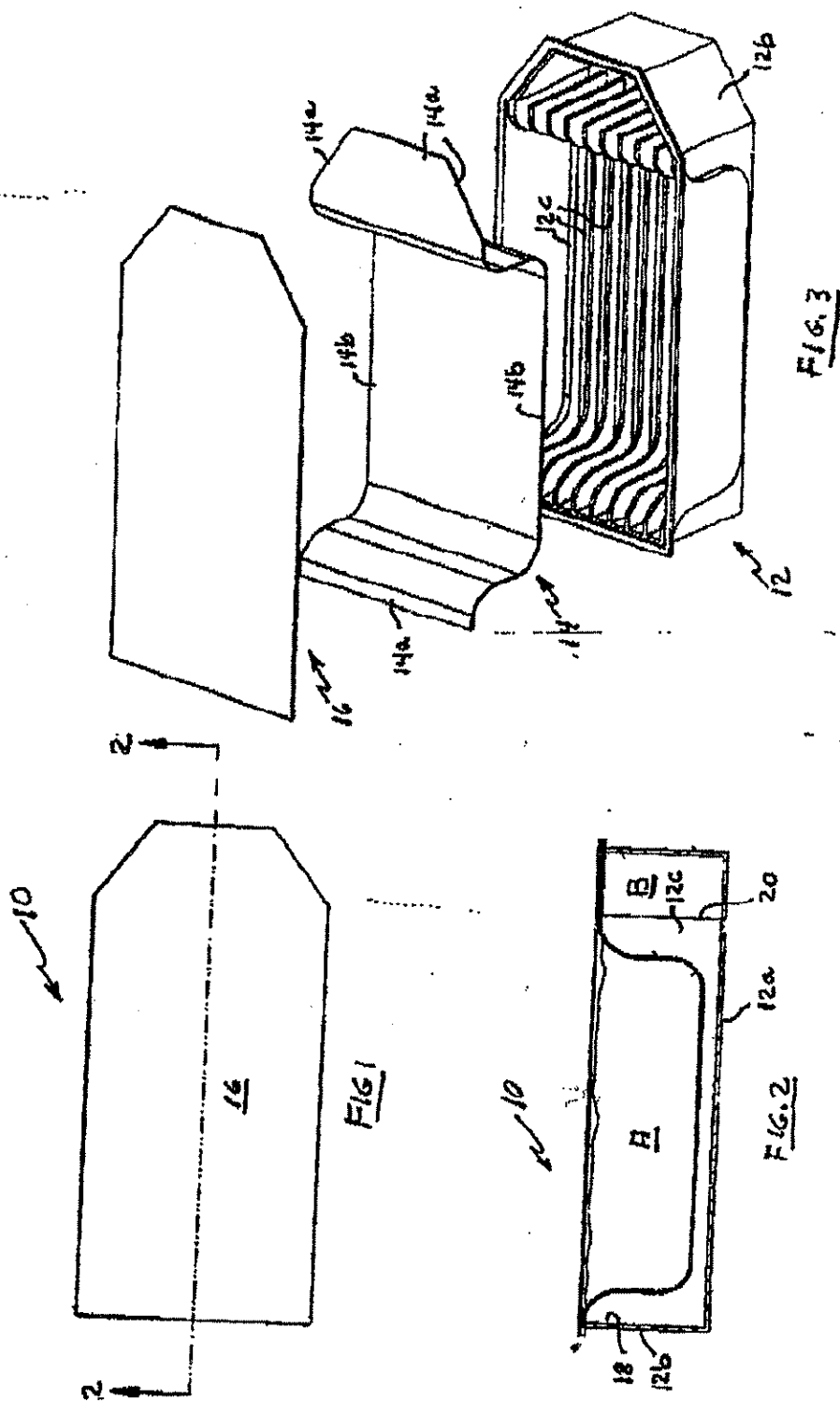
- Improved drainage of the brewed beverage via the channels formed between the support ribs 12c.
- The non-extract chamber volume B of the cartridge is minimized, increasing the longevity of the extract by minimizing the potential for oxygen content. The increased coffee/ total volume ratio is >70% vs. <60% with current cartridges of the type disclosed in the above-references '189 patent.
- "Extract" chamber volume A of the cartridge is increased from ~1.8 cu. in. to ~3.2 cu. in., providing an increased range of beverage concentrations that can be brewed.

In light of the foregoing, those skilled in the art will appreciate that the filter element can be formed from paper, plastic, etc. Likewise, the outer container can be formed of plastic, metals such as aluminum, and other moldable materials, and the lid may also be formed of any available impermeable yieldably piercable material, including metallic foils, plastics, coated papers, etc.

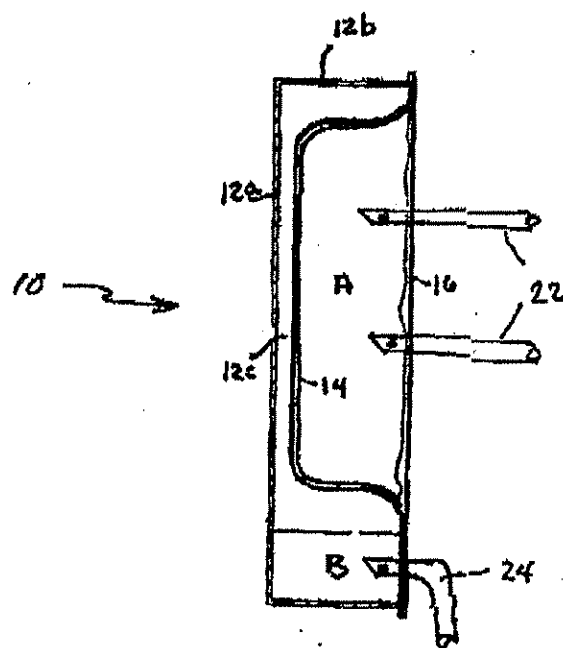
Exterior surfaces of the cartridge may be provided with machine readable features identifying the type of extract, the particular brewing cycle to be employed, etc.

As herein employed, the term "beverage extract" includes an extract or pulverulent substance for the preparation of a beverage, which can be ground roast coffee, tea, instant coffee, a chocolate-type product or any dehydrated edible substance.

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EXHIBIT 5

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

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04 FEB04

FEB 09 02
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(5/87)

U.S. GPO: 2000-488-947/2595

PATENT APPLICATION
OF
NICHOLAS G. LAZARIS
AND
RODERICK H. BEAULIEU
FOR
DISPOSABLE SINGLE SERVE BEVERAGE
FILTER CARTRIDGE

09762665-021304

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ABSTRACT

A beverage filter cartridge comprises an outer container with an access opening. A filter element is received in and configured and arranged to subdivide the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A lid closes the access opening. The lid has a first section overlying the first chamber and a second section overlying the second chamber. The first section of the lid is yieldably pierceable to accommodate an inflow of liquid into the first chamber for infusion with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the second section of the lid is yieldably pierceable to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge.

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CROSS REFERENCES TO RELATED APPLICATIONS

This application claims priority from Provisional Patent Application Serial No. 60/183,569 filed 02/18/2000.

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FIELD OF THE INVENTION

This invention relates to disposable single serve beverage filter cartridges.

DESCRIPTION OF THE PRIOR ART

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A known disposable single serve beverage filter cartridge is disclosed in U.S. Patent Nos. 5,325,765 and 5,840,189 (Sylvan et al), dated respectively July 5, 1994 and November 24, 1998. This beverage filter cartridge is comprised basically of an impermeable yieldably pierceable cup-shaped container thermoformed or injection molded from a relatively rigid plastic material, and internally subdivided by a permeable cone-shaped filter into first and second chambers. A granular or powdered dry beverage medium, e.g., roasted ground coffee, is stored in the first chamber, and the container is closed by an impermeable yieldably pierceable lid comprising a laminate of metallic foil and plastic.

20

During a brewing cycle, the lid and container bottom are pierced from opposite directions, respectively, by tubular inlet and outlet probes. The inlet probe admits heated liquid into the first chamber for infusion with the beverage medium, and the resulting brewed

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beverage passes through the filter into the second chamber from which it exits via the outlet probe for delivery to an underlying cup.

This known beverage filter cartridge has gained rapid and increasingly widespread acceptance, notwithstanding certain problems and disadvantages relating to its use that have
5 persisted since its initial introduction.

For example, as compared to the lid, the bottom of the cup-shaped container is relatively thick, with a higher resistance to piercing. The bottom cannot easily be thinned without adversely affecting the required thickness of the cup's sidewall to prevent permeability to oxygen and the ability to connect the filter material to the sidewall without damaging the oxygen barrier material. Thus, in the course of being punctured by the outlet probe, the bottom exhibits a tendency to distort inwardly, with an accompanying buckling of the container sidewall. Bottom distortion accompanied by sidewall buckling can adversely affect the puncturing process, resulting in leakage around the outlet probe.

A related problem stems from the need to equip the brewers with expensive metallic outlet probes that can be sharpened to the extent necessary to effect piercing of the more resistant container bottoms, and that can resist wear over prolonged periods of use.

Additionally, some of the brewed liquid beverage is not able to be evacuated because the outlet probe opening is above the bottom of the container and some of the beverage has no means of drainage.

20 What is needed, therefore, is an improved beverage filter cartridge that obviates or at least significantly minimizes the above-noted problems and disadvantages.

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SUMMARY OF THE INVENTION

In accordance with the present invention, a beverage filter cartridge includes an impermeable outer container having an access opening. A planar filter element is configured
5 and arranged to subdivide the container interior into first and second chambers. A beverage medium is stored in the first chamber and an impermeable lid closes the access opening.

The lid has a first section overlying the first chamber and a second section overlying the second chamber. The first and second lid sections are yieldably piercable, respectively, from the same direction, by single or multiple inlet and outlet probes. The inlet probe admits heated
10 liquid into the first chamber for infusion with the beverage medium, and the resulting brewed beverage passes through the filter element into the second chamber, from which it exits via the outlet probe.

The lid material has a lesser resistance to being yieldably pierced as compared to the resistance of the container bottom, and is thus less prone to inward distortion with accompanying buckling of the container sidewall. The net result is a cleaner puncture and an
15 improved seal around the outlet probe.

The relative ease with which the lid may be pierced also makes it possible to equip the brewers with less expensive plastic inlet and outlet probes, in single or multiple configurations.

These and other features and advantages of the present invention will now be described
20 in greater detail with reference to the accompanying drawings, wherein:

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of one embodiment of a beverage filter cartridge in accordance with the present invention;

5 Figure 2 is a top plan view of the beverage filter cartridge shown in Figure 1, with portions of the lid and filter element broken away to illustrate details of the container interior;

Figure 3 is a sectional view on an enlarged scale taken along line 3-3 of Figure 2;

Figure 4 is an exploded view of the basic components comprising the beverage filter cartridge shown in Figures 1-3;

Figure 5 is a cross sectional view similar to Figure 3 showing the lid of the beverage filter cartridge punctured by inlet and outlet probes during a beverage brewing cycle;

Figure 6 is a perspective view of another embodiment of a beverage filter cartridge in accordance with the present invention;

Figure 7 is an exploded view of the basic components of the beverage filter cartridge shown in Figure 6;

Figure 8 is a side view of the beverage filter cartridge looking in the direction of arrow "X" in Figure 6;

Figures 9, 10, 11 and 12 are sectional view on an enlarged scale taken respectively along lines 9-9, 10-10, 11-11 and 12-12 of Figure 8; and

20 Figure 13 is a sectional view similar to Figure 10 showing the lid of the beverage filter cartridge punctured by inlet and outlet probes during a beverage brewing cycle.

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DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

Referring initially to Figures 1-5, one embodiment of a beverage filter cartridge in accordance with the present invention is generally depicted at 10. The beverage filter cartridge includes an impermeable outer container 12, a permeable filter element 14, and an impermeable lid 16.

The outer container 12 is generally tray-shaped with a bottom wall 12a, a side wall 12b with a flat rim 12c surrounding an access opening 13, and a plurality of laterally spaced support ribs 12d projecting upwardly from the bottom wall and extending in parallel relationship in the lengthwise direction of the container.

As shown in Figure 3, the ribs 12d join the sidewall 12b at 18, curve downwardly and then extend in parallel relationship to the bottom 12a before again curving upwardly to terminate as at 20.

The filter element 14 is formed from sheet material shaped to conform to the shape of the upper edges of the support ribs. The filter element is received in the container 12, with the edges 14a of its front and back ends overlapping and sealed to the rim 12c of the container side wall 12b, and with the edges 14b of its sides overlapping and sealed to outermost ribs 12d which are formed integrally with the container side wall. When thus positioned, the filter element defines a first chamber "A" separate from a second chamber "B", the latter being in communication with open channels separating the support ribs 12d.

A beverage medium "M", typically roasted ground coffee, is loaded into chamber A, after which the lid 16 is sealed to the rim 12c of the container wall 12b (and to any overlapping

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sealed edge portions of the filter). When thus positioned, the lid has a first section 16a overlying chamber A, and a second section 16b overlying chamber B.

The outer container may be formed, typically by injection molding, from an impermeable heat sealable material.

5 The filter element 14 may be cut or blanked from any suitably pliable, permeable and yieldably piercable sheet material, a preferred example being cellulose polypropylene supplied by J.P. Crompton, Ltd. of Bury, Lancashire, England. The lid may be cut or blanked from any suitable impermeable heat sealable and yieldably piercable material, a preferred example being a metallic/polymer laminate supplied by Heat Seal-Winpak, Ltd. of Montreal, Canada. The lid has less resistance to being yieldably pierced as compared to the outer container, which may or may not be yieldably piercable.

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During a brewing cycle, as shown in Figure 5, the cartridge can be oriented vertically, and the lid 16 is pierced with one or more tubular infusion probes 22 to admit hot water under pressure into chamber A for infusion with the beverage medium M. The resultant beverage passes through the filter element 14 into the channels defined between the support ribs 12d. From here, the beverage flows downwardly into chamber B from which it is extracted by one or more tubular exit probes 24 which pierce the lid and filter element at a location overlying chamber B. The probes 22, 24 are oriented in the same direction to operate on one side of the cartridge, without piercing the outer container. The soluble beverage medium is completely
20 soaked because the rate of hot water being injected into the container is greater than the outflow rate provided by the outlet probes, resulting in the second chamber B becoming filled with beverage extract and forcing the first chamber A to become completely filled with hot water.

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Although not shown, it will be understood that the cartridge may be oriented in other ways than as illustrated in Figure 5 before, during or after the brewing process.

A second embodiment of a beverage filter cartridge in accordance with the present invention is generally depicted at 30 in Figures 6-13. The cartridge components are illustrated separately in Figure 7, and include an outer container 32, a planar filter element 34, and a lid 36.

The container 32 has a bottom wall 38, a front wall 40, a back wall 42, and side walls 44, 46. The front, back and sidewalls extend upwardly from the bottom wall to a peripheral rim 48 surrounding an upper opening 50.

The side walls 44, 46 are appropriately contoured to define generally V-shaped ledges 52 extending between the front and back walls 40, 42, with the lower portions of the ledges 52 being spaced above the container bottom 38. The bottom 38 is preferably contoured to provide an upwardly protruding centrally located boss 54. The back wall 42 is contoured and the upper rim 48 is recessed to provide a well 56 opening towards the interior of the container.

The filter element 34 has front and back edge regions 34a, 34b, and side edge regions 34c. The filter element is configured, dimensioned and operatively positioned to subdivide the interior of the container into first and second chambers "A", "B", with the well 56 opening into and forming part of chamber B. When the filter element is thus positioned, it will be understood that its side edge regions 34c are secured as by heat sealing to the ledges 52 of the side walls 44, 46, and the front and back edge regions 34a, 34b are similarly secured to the front and back walls 40, 42. Preferably, the bottom of the filter element is also secured as by heat sealing to the upwardly protruding boss 54.

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A beverage medium "M" is received through the upper opening 50 and stored in the first chamber A. The upper opening is then closed by securing the lid 36, as by heat sealing, to the peripheral container rim 48.

The outer container may be formed from impermeable heat sealable materials, a preferred example being polyethylene/EVOH/polystyrene supplied by Curwood Flexible Packaging of Oshkosh, Wisconsin, U.S.A.

The materials from which the filter element 34 and lid 36 are formed may be the same as those described previously for the filter element 14 and lid 16 of the first embodiment.

The lid 36 has a first section 36a overlying chamber A, and a second section 36b overlying the well 56.

As shown in Figure 13, at the onset of a brewing cycle, the lid section 36a is pierced by one or more inlet probes 58, and the lid section 36b and underlying portion of the filter element are pierced by an outlet probe 60. The inlet probe admits heated liquid into chamber A for infusion with the beverage medium M, and the resulting brewed beverage passes through the filter element into chamber B from which it exits via the outlet probe 60.

It will thus be seen that in both embodiments, the outer container is not pierced. Rather, liquid communication is established with the separate chambers A, B by inlet and outlet probes operating from the same side of the cartridge to pierce different sections of the readily pierceable lid.

Although the outer container and lid have been described as being formed from impermeable materials, it will be understood by those skilled in the art that, alternatively, permeable materials may be employed for one or both of these components. Where permeable materials are employed, the completed cartridges will preferably be subsequently enclosed,

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- 1 ~~2~~ 1. A beverage filter cartridge comprising:
- 2 an outer container having an access opening;
- 3 a permeable filter element received in and configured and arranged to subdivide the
- 4 interior of said container into first and second chambers;
- 5 a soluble beverage medium stored in said first chamber; and
- 6 a lid closing said access opening, said lid having a first section overlying said first
- 7 chamber and a second section overlying said second chamber, the first section of said lid being
- 8 yieldably pierceable to accommodate an inflow of liquid into said first chamber for infusion
- 9 with the beverage medium to produce a beverage, said filter element being permeable to
- 10 accommodate a flow of the beverage from said first chamber into said second chamber, and the
- 11 second section of said lid being yieldably pierceable to accommodate an outflow of the beverage
- 12 from said second chamber to the exterior of said cartridge.
- 13 2. The beverage filter cartridge of claim 1 wherein said lid has less resistance to
- 14 being yieldably pierced as compared to that of said container.
- 15 3. The beverage filter cartridge of claim 1 wherein said filter element is yieldably
- 16 pierceable.
- 17 4. The beverage filter cartridge of claim 1 wherein a first section of said filter
- 18 element coacts with interior surfaces of said container to define said first chamber, and a
- 19 second section of said filter element underlies the second section of said lid.
- 20 5. The beverage filter cartridge of claim 1 wherein said container is provided with
- 21 a flat rim surrounding and projecting outwardly from, said access opening, and wherein edge
- 22 segments of said filter element overlap and are heat sealed to segments of said rim.

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- 1 *cut* 6. The beverage filter cartridge of claim 4 wherein the second sections of both said
2 lid and said filter element are yieldably pierceable to accommodate the beverage outflow from
3 said second chamber.
- 1 7. The beverage filter cartridge of claim 1 wherein said filter element comprises a
2 planar sheet of permeable yieldably pierceable material.
- 1 8. The beverage filter cartridge of claim 1 wherein said outer container is
2 impermeable.
- 1 9. The beverage filter cartridge of claims 1 or 8 wherein said lid is impermeable.

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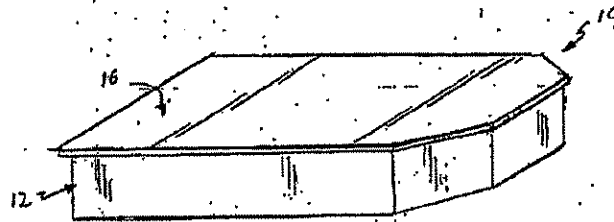


FIG. 1

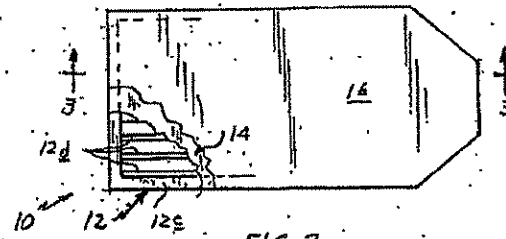


FIG. 2

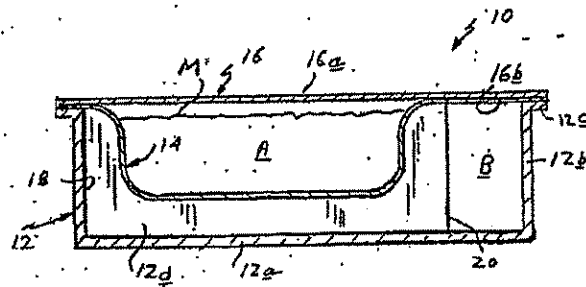


FIG. 3

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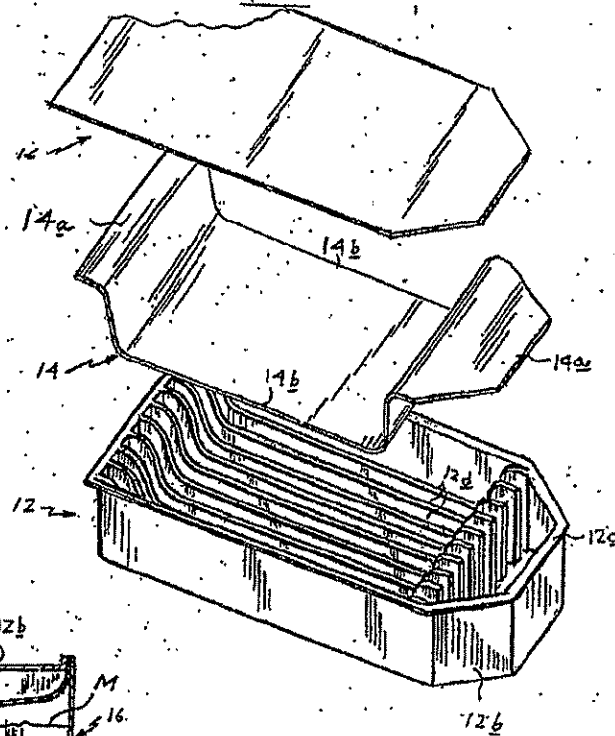


FIG. 4

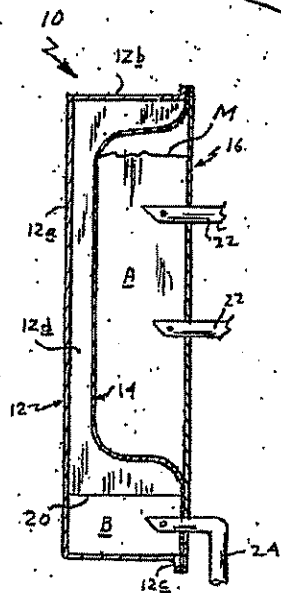


FIG. 5

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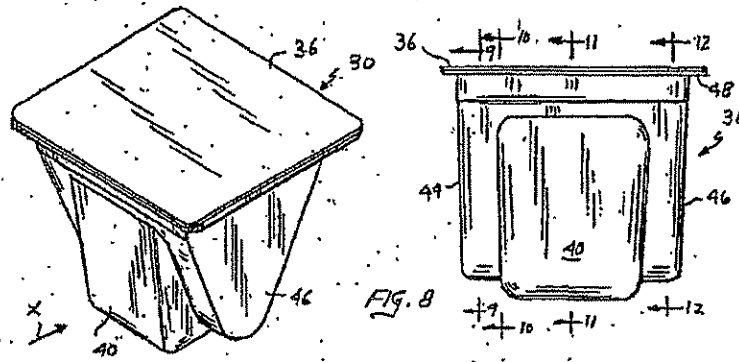
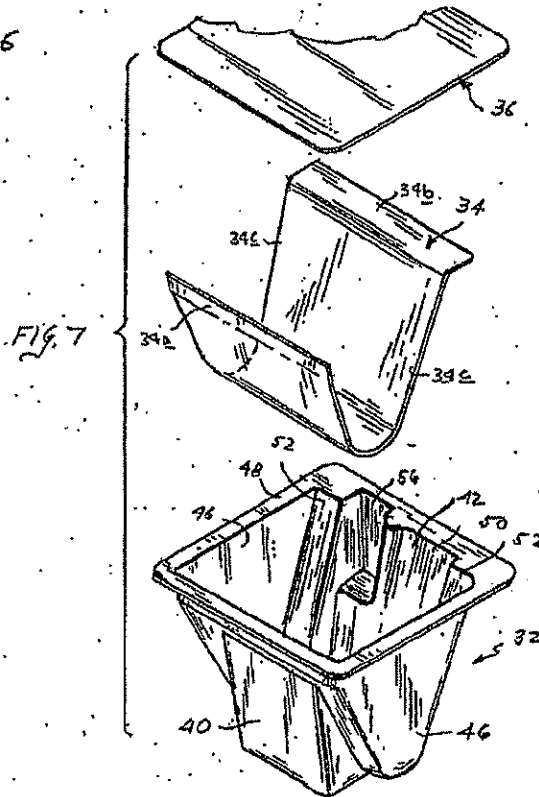


FIG. 6



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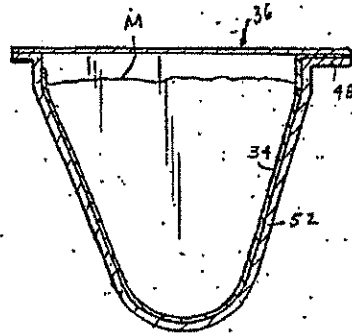


FIG. 9

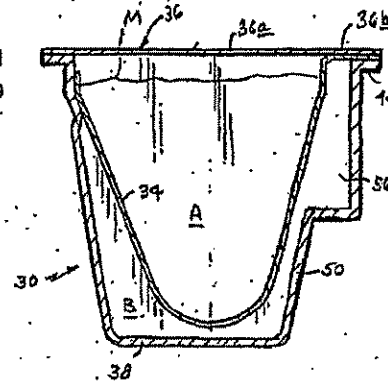


FIG. 10

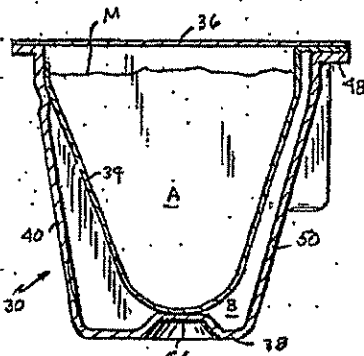


FIG. 11

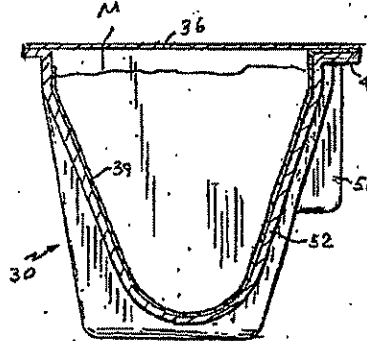
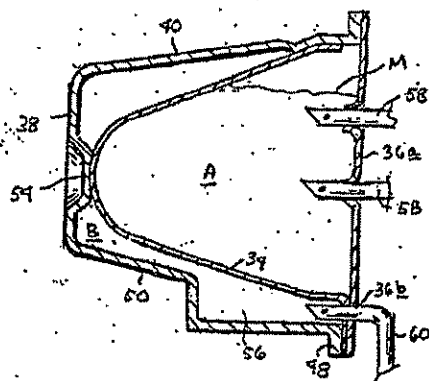


FIG. 12

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